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# Home-country export regulations, credit markets, and corruption: implications for different types of internationalization

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## Abstract

Direct exporting activities and outward foreign direct investment (OFDI) are two types of internationalization that differ in firms' opportunities, resources and risks. We study home-country institutional factors for internationalization and empirically investigate the direct and joint effects of export regulations, credit markets and corruption in explaining exporting and OFDI from a country. Using country-level data from 96 developed and developing countries between 2000 and 2018, we test a series of hypotheses and examine nonlinearity in the relationships. The results of the study suggest that export regulations partially affect exporting but do not affect OFDI. Access to financial resources can be critical in parts for both exports and OFDI. The findings also show that corruption can have different implications for exports and OFDI. The interactions of corruption with export regulations and credit markets reveal some unexpected and counter-intuitive results, highlighting the importance of distinguishing between the direct and indirect (joint) effects of business environment factors and corruption on exports and OFDI. The results of the study contain important information for policymakers.

**Keywords:** institutions, exports, OFDI, corruption, export regulation, credit markets

**JEL classification numbers:** F1, F2, L5, O50

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## 1. Introduction

Many countries have undertaken significant policy interventions in the form of regulatory reforms intending to promote internationalization (Stoian and Mohr, 2016; Becker-Ritterspach et al., 2019) for domestic firms to achieve growth in foreign markets. Exports and outward foreign direct investment (OFDI) are two types of internationalization activities that differ in motivation and process, required resources, cost structure and associated risk (Benacek et al., 2000; Asamoah et al., 2019).

Exporting provides access to new markets, and OFDI can broadly support economic development and macroeconomic gains in some contexts (see Knoerich, 2017). Yet, firms seeking new markets when they internationalize can seek access to these markets in different ways. Many business decisions and activities, including internationalization, may be chosen on the basis of the institutional environment (see Williamson, 2000; Cuervo-Cazurra et al., 2015). OFDI widens the options for firms to respond to the home-country environment, in addition to exporting. For instance, OFDI can help a firm escape challenges in the home country (see Cuervo-Cazurra et al., 2017, 2015; Cuervo-Cazurra and Ramamurti, 2017; Shi et al., 2017; Witt and Lewin, 2007), whereas exports may not provide that option. Yet, exporting may entail fewer foreign market risks (Gaur et al., 2014) or a different kind of known risk, and a firm can use the home-country environment (Cuervo-Cazurra et al., 2015) to its advantage (see McDougall and Oviatt, 2000; Lu and Beamish, 2001).

The institutional environment for internationalization includes not only institutions that directly govern exporting (export regulations) but also the institutions that provide necessary capital inputs to firms to be able to internationalize (credit markets) (see Armour and Cumming, 2008; Rajan and Zingales, 1998). Thus, policymakers play an essential role in setting the conditions under which firms internationalize. In addition, the process of getting it all done, such as the extent to which corruption is embedded in the environment, is an essential consideration for firm decisions in many contexts (Chowdhury et al., 2019; Altomonte, 2000).

Previous research shows that the interplay between formal institutions such as regulations and informal institutions such as corruption are important in understanding both firm outcomes (Audretsch et al., 2021; Chowdhury et al., 2019) and whether, for example, corruption is “sand” or “grease” for the process of internationalizing (Méon and Weill, 2010; Méon and Sekat, 2005). Therefore, policymakers need to consider internationalization processes in the context of corruption.

To understand how these interact, we investigate the relationship between these two types of internationalization (exports and OFDI) with an institutional context, specifically home-country export regulations, domestic credit markets

and corruption. We draw on institutional frameworks to derive and test a set of hypotheses about exports and OFDI, and we use data from 96 countries from 2000 to 2018 to test a set of hypotheses about the direct and indirect effects of institutional context. We provide insight into how home-country institutional conditions can shape internationalization (Bernard et al., 2007; Luiz et al., 2017; Krammer et al., 2018), which is relatively less studied than the host country context.

In doing so, our study advances knowledge in two substreams of research. First, we contribute insights into the effect of export regulations and credit markets during internationalization (Vujanović et al., 2021; Audretsch et al., 2019; Luiz et al. 2017) by demonstrating that exports and OFDI activity respond to changing tariff and non-tariff regulation, market disclosure and non-financial investment. Second, we advance knowledge on home-country factors in the extensive literature on the dynamics of different types of internationalization (Luiz et al., 2017). Finally, we extend international business and management research by distinguishing between the direct and indirect (joint) effects of business environment factors and corruption on exports and OFDI (see Lu and Beamish, 2001; Bernard et al. 2007; Krammer et al. 2018).

Our analysis is relevant for public policy. We find that corruption can play a mixed role in exports and OFDI and that greater regulation of exports limits exports and OFDI. We find lower tariff rates to be associated with exports. Finally, our results show that improving access to credit and easing export requirements can be relevant considerations for internationalization in some contexts.

Next, we present and hypothesize about links among export regulations, credit markets, corruption and internationalization. In the third section, we describe our data and methodology. The fourth section presents our results, followed in the next section by the robustness check. Section six reports conclusions, policy implications and recommendations, and section seven offers future research directions.

## **2. Theory and hypotheses**

### **2.1 Institutional context and internationalization**

Institutions reflect the “rules of the game” that shape economic activity (North, 1990). Broadly, formal institutions represent codified conditions, and informal institutions reflect norms and uncoded “systems of meaning” (Deepphouse et al., 2016). Whereas formal rules themselves may be explicit and well-articulated, informal institutions tend to “have never been consciously designed” (Sugden, 1986, p. 54).

The institutional environment in a country shapes conducive or challenging conditions for business activities (Dunning and Lundan, 2008; North, 1990; Witt and Lewin, 2007) and is an important influence on business decisions of firms, which can respond in different ways such as whether and how to internationalize (see Cuervo-Cazurra et al., 2019; Oliver, 1991). In addition, interactions between formal institutions and informal institutions (i.e. corruption) are important, as monitoring and enforcement of rules can vary across countries (see Acemoglu et al., 2001; Miller, 2000). In some environments, informal institutions can be as or even more important than formal institutions (see Baumol, 1990).

Regulatory institutions directly shape business activities. For example, an exporting firm needs to clear export regulations in the home country and meet requirements in another country. However, any number of dimensions and regulatory focus area permutations means that the effects of regulation on a firm are not always clear or linear (Audretsch et al., 2019). For example, the financial cost (e.g. filing fees) to file a required document may be low, but the time it takes to complete the document may be lengthy. Or, the same type of documentation required to register property in one country may be easy to accomplish, but it may be difficult in another country with a different system. In addition, some regulatory arrangements may raise transaction costs, whereas others may protect consumers and firms, facilitate transactions and reduce uncertainty (see Beltiski et al., 2016; Chowdhury et al., 2019).

## **2.2 Home-country export regulation and internationalization**

Firms need to navigate clusters of action (see Krammer et al., 2018), including obtaining the requisite permissions, licences and legal requirements to engage in the internationalization process. Both exporting and OFDI require compliance with home-country regulations in the internationalization process, such as to finance domestic production expansion or capabilities or to move capital or goods across borders. Firms interested in internationalizing incur fixed costs that are sunk costs (Impullitti et al., 2013) – known, upfront costs necessary to comply with regulations (Chetty and Hamilton, 1993; Bernard et al., 2007).

Under conditions where export regulations are easy to navigate and firms incur relatively fewer costs to meet regulatory requirements, exporting may be an attractive activity. When the stated requirements are clear and reflect the process in practice, firms can rely on such information and commit to exporting what they produce in their home country. They can anticipate the costs of internationalization accordingly. In contrast, when firms become misaligned with the regulatory environment (see Witt and Lewin, 2007), they may experience a competitive disadvantage and may reposition themselves (Yamakawa et al., 2013; Witt and Lewin, 2007) by acquiescing, complying or adapting, appealing or compromising, defying, manipulating, or escaping or avoiding the regulatory environment

(Cuervo-Cazurra et al., 2019; Oliver, 1991). Furthermore, OFDI activities can widen the options for firms to respond to a challenging home-country environment by establishing a subsidiary in another country. We therefore hypothesize as follows:

**Hypothesis 1:** More extensive home-country export regulations will  
(a) discourage internationalization through exports and (b) encourage internationalization through OFDI.

## 2.3 Home-country credit markets and internationalization

Access to capital varies across countries, reflecting differences in the development and strength of credit markets. Differences in credit market development can help explain differences in export patterns (Manova, 2008). Both exports and OFDI require financial capital for several reasons. Export regulations can be accompanied by direct financial costs in the form of permits and fees. In addition to these direct costs, there can also be indirect costs, such as staff time spent in complying with regulations, which could be redirected away from conducting firm growth-oriented activities or paying for legal or accounting expertise.

Firms could also incur costs related to search (Cuervo-Cazurra, 2012) and exploration in foreign markets to determine if they should export or invest and to assess potential profitability in the foreign market (Bernard et al., 2007). In addition, firms that expand in foreign markets can face a wide range of costs, such as those related to transportation (e.g., freight and time costs), policy (e.g., tariffs and non-tariff matters), information, contracts, currency, legal and regulatory needs, and local distribution costs (Anderson and Wincoop, 2004: 692). Thus, financing is an important consideration for firms looking to internationalize.

Creditor rights can play a prominent role in economies with functional bankruptcy systems (Djankov et al., 2007; Chetty and Hamilton, 1993). Previous research has found that loans have more concentrated ownership in countries with stronger creditor protection, longer maturities and lower interest rates (see Qian and Strahan, 2007). Investor protections affect how firms raise the capital needed to start and grow, innovate, diversify and compete. Without investor protections, equity markets are stunted and banks become the only source of finance. Economies with deep, dynamic capital markets tend to protect investors effectively, as they receive the information they can trust more. In the absence of such protections, they may be reluctant to invest in their home country unless they become controlling shareholders, reducing the supply of equity capital in-house (Dahya et al., 2008). A weak financial system in the home country may result in firms moving away from internationalization activities because they are not able to finance them. Or, it could result in firms shifting their attention to seek financial resources abroad (Cuervo-Cazurra et al., 2015), which could raise costs (Rajan and Zingales, 1998)

related to searching abroad and dealing with potential intermediaries. This kind of redirection – which could occur through OFDI activity – would not be necessary if firms could find resources in the home country. We therefore posit as follows:

**Hypothesis 2:** Less developed home-country credit markets will (a) discourage internationalization through exports and (b) encourage internationalization through OFDI.

## 2.4 Home-country corruption and internationalization

Another important consideration for firms is corruption, which can become an expected condition for firms when it is deeply entrenched in a country (see Audretsch et al., 2019; Cuervo-Cazurra, 2008; Li et al., 2008; Rose-Ackerman, 2007). For firms seeking to internationalize, “rules of procedures that actors employ flexibly and reflexively to assure themselves and those around them that their behavior is reasonable” (DiMaggio and Powell, 1991, p. 20) can pose a threat because of the nature and costs of corruption.

Corruption is primarily associated with adverse effects on economic activity (Audretsch et al., 2019; Glaeser and Saks, 2006; Shleifer and Vishny, 1993), although there is a debate that it may “grease the wheels” for businesses in some situations (see Shleifer and Vishny 1993; Méon and Sekkat, 2005). Belitski et al. (2016) argue that corruption is harmful in the long term because access to resources is built through hidden and informal channels, which become institutionalized over time, and this increases the vulnerability of firms and redirects the pool of public resources away from other investments.

When corruption is deeply embedded, it can result in changing behaviour such that it becomes common in business practices (Cuervo-Cazurra, 2008). Firms that need export permits or tax documents to enter foreign markets may be easy targets for public officials during regulatory compliance processes. These firms will have to seek out interactions specific to internationalization that non-exporting firms would not. Where corrupt officials can hinder or delay approvals so as to create an opportunity for bribes (Myrdal, 1986), this increases firms’ vulnerability. Firms engaged in export activities may be able to grow by accessing a larger market, but at the same time, this could put them on the radar of corrupt officials. Some firms may have the resources to afford to pay bribes (Tonoyan et al., 2010), access corrupt officials to facilitate their transactions, and seek to build channels or maintain their access. However, these payments or relationship costs still divert resources from productive activities, such as investing in export capability.

When corruption is associated with relative loss of home institutional legitimacy (DiMaggio and Powell, 1983) and firms do not trust the environment in the home country, they may prefer to move their capital abroad in OFDI activity rather than

attempting to export. Thus, OFDI could reduce their vulnerability to corruption associated with production and exporting from the home country. We, therefore, hypothesize as follows:

**Hypothesis 3:** Home-country corruption will (a) discourage internationalization through exports and (b) encourage internationalization through OFDI.

## **2.5 The moderating effect of corruption and regulations on internationalization**

When complying with export regulations, a firm might be asked to pay bribes if officials use their power to delay or interfere with the paperwork necessary for export permits to seek bribes. This cuts into potential profits and exposes the firm to possible future corruption without recourse (see Belitski et al., 2016; Audretsch et al., 2019). Enforcement of regulations also influences how firms comply with regulations. In an environment with poor or arbitrary enforcement in line with the codified guidance and with high corruption, the rules may be applied to some firms unevenly or differently (Meon and Weill, 2010; Laeven and Woodruff, 2007).

Firms may be uncomfortable or unable to find institutional alignment (Witt and Lewin, 2007) in a difficult or discretionary regulatory environment. Depending on their available resources, they may explore the options available to them and decide on bargaining versus not bargaining with authorities. Bargaining behaviour is likely to occur before avoidance of bargaining, should the export regulations be flexible and potential bribe costs affordable (see Djankov 2002, Méon and Sekkat, 2005; Meon and Weill, 2010). Non-bargaining behaviour may result in non-compliance and avoidance, including looking for ways to reduce visibility to corruption, incentivizing a firm to stay small and not engage in exports or in seeking growth outside the country through OFDI.

Greater corruption combined with extensive export regulations mean more points of interaction where firms could be exploited, encouraging avoidance (Luiz et al., 2017). Furthermore, Djankov (2002) found that more corruption is associated with a highly regulated environment. This kind of environment, marked by high corruption and extensive export regulation, could motivate firms that are interested in exporting to abandon the effort or to look for other internationalization opportunities. Therefore, we posit as follows:

**Hypothesis 4:** Higher home-country corruption will (a) accentuate the negative relationship between export regulations and exports and (b) accentuate the positive relationship between export regulations and OFDI.



## 2.6 The moderating effect of corruption and credit markets on internationalization

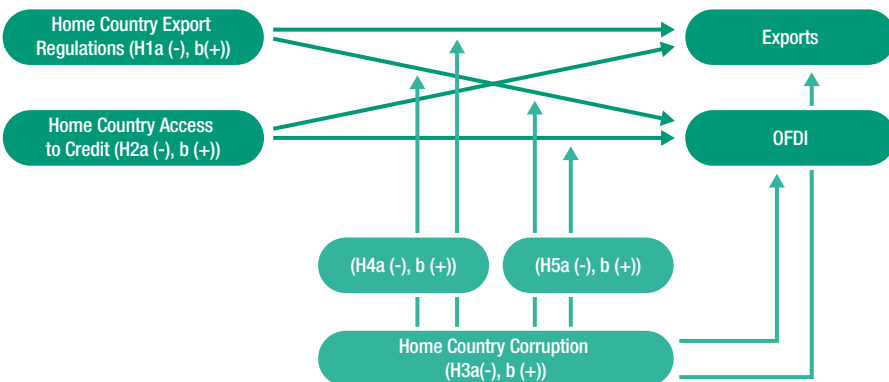
Corruption can affect credit markets and how firms can access them. It distorts the efficient flow of capital resources to productive projects (Khwaja and Mian, 2011). In a corrupt context, lenders may instead redirect financial resources to unproductive projects rather than finding and funding the most competitive and promising projects. Institutional lenders may already view internationalization into new foreign markets as risky or expensive, so diversion of capital can worsen access for potential exporters. Without access to capital, firms are unlikely to invest fully in exporting and, in a highly corrupt context, are also more likely to divert existing funds to pay bribes in other areas. O'Toole and Tarp (2014) test how informal bribe payments affect the marginal return per unit of investment and find that bribery can decrease investment efficiency.

More corruption is likely to accelerate the difficulties that firms face in a weak credit market and create a double constraint, particularly for firms that do not have the means to self-finance or that are new, small or first-time exporters. These constraints could discourage exports and motivate OFDI to more efficient foreign credit markets with less or no corruption (see Witt and Lewin, 2007; Stoian and Mohr, 2016; Cuervo-Cazurra and Ramamurti, 2017). We thus hypothesize as follows:

**Hypothesis 5:** Higher home-country corruption will (a) accentuate the negative effect of weak credit markets on exports and (b) accentuate the positive effect of weak credit markets on OFDI.

Figure 1 shows the hypothesized relationships.

**Figure 1. Conceptual model and hypotheses**



Source: Based on authors' estimations.

### 3. Data and method

#### 3.1 Data and sample

We construct the sample for our analysis by matching data from multiple sources for the period 2000–2018: ILOSTAT, World Bank and OECD (national accounts), Transparency International, the World Bank's Doing Business data, its World Development Indicators, the International Monetary Fund's (IMF) Government Finance Statistics, the World Economic Forum's *Global Competitiveness Report* and the UNSTAT Sustainable Development Goal Indicators. Our sample includes 96 developed and developing countries, offering good coverage of institutional contexts (see Audretsch et al., 2019; Thai and Turkina, 2013).

Our data set is an unbalanced panel covering the 96 countries over the period 2000–2018. Our final sample consists of 1,433 observations of the variables of interest, where data are available.

#### 3.2 Dependent variables

We use two country-level measures for internationalization. Institutional factors have differential effects across industries and types of firms; however, to gain insight into the overall picture for the whole economy, we use country-level measures for internationalization. All variables used in the models and their definitions and measurement are presented in table 1. First, *exports* are measured as a share of GDP, taken from World Bank national accounts data (World Bank, 2019), reflecting direct exporting activity undertaken by businesses (see Krammer et al., 2018). The values in our sample vary from 8.24 to 188 per cent of GDP (where exports significantly overtake GDP, such as in economies that are involved in substantial international trade activity with a little value added to each service or good); the average is 40.68 per cent.

*OFDI* is measured as net FDI outflow as a share of GDP (Witt and Lewin, 2007), taken from IMF balance-of-payments data (2019). The extent of outward direct investment can be seen as an indication of a mature economy. OFDI has been linked to investment competitiveness and is crucial for long-term, sustained growth (see Asamoah et al., 2019). For example, firms from the United Kingdom, Germany, Japan and the United States have long made extensive investments outside their domestic markets and have high positive OFDI. Other economies receive large amounts of OFDI, as China has for the past two decades, for example, and have negative OFDI. The average OFDI is 1.52, which demonstrates that, on average, countries invest more abroad than they receive (as a per cent of GDP). A negative OFDI value of 89.63 illustrates that the country had net inward FDI equal to 89.63 per cent of GDP (table 2).

### 3.3 Explanatory variables

We use three measures for *home-country export regulations*. First, we use the *time to export (border compliance)*, the number of hours needed to comply with procedures to export goods and services. It is taken from the World Bank Doing Business data (see Li, 2019). Second, we use customs *procedures*, which measures business executives' perceptions about the efficiency of customs procedures in their country, with ratings ranging from -1 to -7. This is taken from the World Economic Forum's *Global Competitiveness Report* (WEF, 2019). We reverse this indicator in our analysis so that a value of -7 reflects extremely efficient custom procedures and a value of -1 reflects extremely inefficient procedures. Our third measure for home-country export regulations is *tariff regulation*, calculated as the average of effective applied rates, weighted by product import shares, corresponding to each partner country; this is taken from the UNSTAT Sustainable Development Goal Indicators.<sup>1</sup>

We use three measures to capture the scope, accessibility and effectiveness of domestic credit markets in the home country, taken from the IMF and Government Finance Statistics Yearbook. The *disclosure index* measures the extent to which investors are protected through the disclosure of ownership and financial information. *Domestic credit to the private sector*, expressed as a percentage of GDP, reflects financial institutions' financial resources (e.g. loans, purchases of non-equity securities, trade credits and other accounts receivable). The third measure accounts for the breadth of *non-financial investment* as a percentage of GDP, such as investment in government fixed assets, inventories, valuables and non-production assets.

To measure *corruption* (perceived corruption), we use the Corruption Perception Index (CPI) from Transparency International. Corruption is estimated as an aggregate indicator at the country level, in units of a standard normal distribution which was normalized and reversed, i.e., ranging from approximately -1 (highly corrupt) to -100 (very clean) (Cuervo-Cazurra, 2008; Audretsch et al., 2019). In our study, the range is a value of -15 (Botswana) to -99 (Norway).

### 3.4 Control variables

We also include several control variables that may influence export activities and OFDI, drawing on previous research. Detailed definitions of the control variables and their measurement and sources are listed in table 1. *Economic development* is measured by GDP per capita in purchasing power parity in constant 2010 United States dollars, in logarithms. We control for the size of home-country demand by using *population* (see Cuervo-Cazurra, 2008, 2012). We proxy for *government size*

<sup>1</sup> <https://unstats.un.org/sdgs/indicators/database/>.

using government expenditures (see Audretsch et al., 2021), including consumption and transfers as a percentage of GDP. Given the importance of industry in market opportunities, we also control for the *industry* in the domestic home economy.

We also use several variables to proxy for the broader business environment in a country, as prior research shows the importance of business regulations in shaping managerial decision-making, firm activities and performance (see Welter et al., 2019). In line with research on the importance of considering multiple dimensions of business regulation, as well as how regulations are implemented through administrative processes or financial costs (Audretsch et al., 2019), our controls include measures for the time, cost or procedures related to specific business regulation focus areas.

We include two measures of entry regulation because it affects the pool of new firms (Klapper et al., 2006) from which future exporters emerge and can affect firm profitability (Cherchye and Verriest, 2016). Changing technologies have affected the speed of scaling and internationalization, with many start-ups now being “born global” firms (Cavusgil and Knight, 2015; Sinkovics and Penz, 2005). *Time to entry* captures the number of days needed to comply with entry regulation, and *entry procedures* reflects the number of separate procedures to start and formally operate a business in the country.

We include two measures related to property registration, as security of property is an important factor in the emergence and nature of the business activity (see Johnson et al., 2002), and the cost and uncertainty of securing property can influence not only whether people start firms, but also which activities they undertake. For example, firms may consider the complexity of property registration if they are considering opening a production facility to produce goods for export. We use the *time to register property*, measured as the number of days needed to register property, and *procedures to register property*, captured as the number of procedures to register a property. These measures are based on a standard case of an entrepreneur who wants to buy land and an already registered building that is free of title dispute.<sup>2</sup> All of the entry regulations and property registration data come from the Doing Business data.

Our controls for the regulatory environment also include measures of tax policy, which affects the ability of firms to make and anticipate profits, shaping strategic decisions about business activities and business growth (see Belitski et al., 2016). We include the *profit tax rate* (World Bank, 2019). Given the heterogeneous nature of the effects of various forms of tax policy (Audretsch et al., 2021; Chowdhury et al., 2015), we also include the *time required to pay taxes* in hours per year, including preparation and filing time (from the Doing Business data).

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<sup>2</sup> See [doingbusiness.org](https://doingbusiness.org) for detailed description of the underlying data sources.

We also capture potentially relevant labour market trends by including *unemployment* in a country (Audretsch and Thurik, 2000) as well as the *quality of scientific research*, measured using the number of scientific and engineering articles published (in physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering and technology, and earth sciences) (Schultz, 1959; Mincer, 1974). We do this because scientific activity is important for economic and innovation activity in a country (Sepehrdoust et al., 2021, 2020; Olavarrieta and Villena, 2014). Investors could have opportunities to profit from the commercialization of science in the home country, but at the same time, new and better products and services that result from scientific discoveries and innovation can be attractive in foreign markets and mean more export opportunities.

Table 1 describes the variables in our study, and table 2 presents the descriptive statistics and the correlation matrix. The majority of our variables are not highly correlated.

**Table 1. Variable definition and measurement**

Variable	Description	Source
Exports	Exports of goods and services (per cent of GDP)	World Bank, national accounts data, and OECD, National Accounts data
OFDI	Net FDI outflows of investment from the reporting economy to the rest of the world divided by GDP (per cent of GDP)	International Monetary Fund, Balance-of-Payments database
Time to export	Time to export, border compliance (in hours) in logs. Captures the time associated with compliance with the economy's customs regulations and with regulations relating to other inspections that are mandatory in order for the shipment to cross the economy's border, as well as the time for handling that takes place at its port or border.	World Bank, Doing Business Project
Customs procedures	Burden of customs procedure (reversed) Measures business executives' perceptions of their country's efficiency of customs procedures with ratings ranging from -1 to -7, whereby -7 denotes extremely efficient and -1 denotes extremely inefficient	World Economic Forum, <i>Executive Opinion Survey</i> and <i>Global Competitiveness Report</i>
Trade tariff	Tariff rate, applied, weighted mean, all products (%) Weighted mean applied tariff: average of effectively applied rates weighted by the product import shares corresponding to each partner country	UNSTAT, Global SDG Indicators Database
Disclosure index	Business extent of disclosure index (0 = less disclosure to 10 = more disclosure) Measures the extent to which investors are protected through disclosure of ownership and financial information	World Bank, Doing Business Project
Corruption	Corruption Perception Index, normalized and reversed (-100 = very clean, -1 = highly corrupt)	Transparency International

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**Table 1. Variable definition and measurement (Concluded)**

Variable	Description	Source
Non-financial investment	Net investment in government non-financial assets (per cent of GDP) Includes fixed assets, inventories, valuables and non-production assets	International Monetary Fund, Government Finance Statistics Yearbook and data
Domestic credit to private sector	Domestic credit to private sector (per cent of GDP) Refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of non-equity securities and trade credits and other accounts receivable, that establish a claim for repayment; for some countries these claims include credit to public enterprises	International Monetary Fund, International Financial Statistics and data
Economic development	GDP per capita in purchasing power parity (constant 2010 US\$)	World Bank, national accounts data
Population	Country population, in logarithms	World Bank, national accounts data
Government size	General government final consumption expenditure (per cent of GDP) (formerly general government consumption).	World Bank, national accounts data
Industry	Manufacturing industry, value added (current US\$) as per cent of GDP	World Bank, national accounts data, and OECD, National Accounts data
Time to entry	Time required to start a business (days) = the number of calendar days needed to complete the procedures to legally operate a business	World Bank, Doing Business Project
Entry procedures	Number of procedures required to start a business, including interactions to obtain necessary permits and licenses and to complete all inspections, verifications and notifications to start operations	World Bank, Doing Business Project
Time to register property	Number of calendar days needed for businesses to secure rights to property	World Bank, Doing Business Project
Procedures to register property	Number of procedures required for a business to secure rights to property	World Bank, Doing Business Project
Profit tax rate	Amount of taxes on profits paid by the business (per cent of profit)	World Bank, Doing Business Project
Time required to file taxes	Hours per year that it takes to prepare, file and pay (or withhold) three major types of taxes: corporate income tax, value added or sales tax, and labour taxes, including payroll taxes and social security contributions	World Bank, Doing Business Project
Unemployment	Share of the labour force without work but available for and seeking employment (per cent of total labour force)	International Labour Organization, ILOSTAT database
Scientific output	Number of scientific and engineering articles published in the following fields: physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering and technology, and earth and space sciences, normalized by 1,000 domestic scientists (in logs).	World Bank, World Development Indicators

Source: Based on ILOSTAT database; World Bank national accounts data and OECD National Accounts; Transparency International; World Bank, Doing Business Project; International Monetary Fund, Government Finance Statistics; World Bank World Development Indicators; World Economic Forum, *Global Competitiveness Report*; UNSTAT Global SDG Indicators Database.

Note: number of observations = 1,433.

Table 2. Descriptives and correlation matrix

Descriptive	Mean	Std. Dev.	Max	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Exports	40.68	27.13	8.24	188.00	1																		
2. OFDI	1.52	8.01	-89.63	44.00	0.25*	1																	
3. Trade tariff	5.42	4.26	0.00	35.00	-0.23*	-0.13*	1																
4. Time of export	3.47	1.23	0.00	5.74	-0.21*	-0.14*	0.40*	1															
5. Customs procedures	-4.05	0.87	-6.45	-1.80	-0.43*	-0.25*	0.40*	0.40*	1														
6. Domestic credit to private sector	60.12	45.73	3.54	253.26	0.27*	0.22*	-0.38*	-0.41*	-0.62*	1													
7. Non-financial investment	3.22	2.95	-4.83	15.44	0.02	-0.05*	0.28*	0.19*	0.23*	-0.33*	1												
8. Corruption	-44.75	20.58	-99.00	-15.00	0.12*	0.09*	-0.23*	-0.13*	-0.30*	0.30*	-0.19*	1											
9. Disclosure	6.81	2.57	1.00	10.00	-0.36*	-0.26*	0.39*	0.50*	0.80*	-0.72*	0.29*	-0.25*	1										
10. Science	8.91	5.01	2.95	15.30	0.04*	0.12*	-0.42*	-0.30*	-0.44*	0.57*	-0.46*	0.42*	-0.49*	1									
11. Manufacturing	27.47	9.42	5.00	74.81	0.16*	-0.04*	-0.09*	0.12*	0.09*	-0.15*	0.21*	0.11*	0.15*	-0.10*	1								

/...

Table 2. Descriptives and correlation matrix (Concluded)																									
Descriptive	Std.																								
	Mean	Dev.		Max1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
12. Start-up time	28.94	24.82	0.50	125.00	-0.06*	-0.06*	0.15*	0.16*	0.33*	-0.24*	0.17*	-0.20*	0.23*	-0.05*	0.17*	1									
13. Register property time	48.88	55.76	1.00	389.00	-0.13*	-0.05*	0.14*	0.18*	0.18*	-0.23*	0.12*	-0.20*	0.21*	-0.04*	0.02	0.22*	1								
14. Taxes time	281.88	283.79	12.00	2600.00	-0.15*	-0.08*	0.10*	0.11*	0.40*	-0.21*	-0.02	-0.11*	0.32*	-0.10*	0.14*	0.16*	0.03	1							
15. Start-up procedures	8.44	3.49	1.00	20.00	-0.18*	-0.15*	0.23*	0.27*	0.50*	-0.41*	0.10*	-0.30*	0.49*	-0.17*	0.27*	0.46*	0.16*	0.3*	1						
16. Register property procedures	6.10	2.14	1.00	13.60	-0.14*	-0.04*	0.12*	0.21*	0.37*	-0.18*	0.05	-0.24*	0.31*	-0.23*	-0.06*	0.06*	0.14*	0.24*	0.33*	1					
17. Profit tax	17.26	8.01	0.00	35.40	-0.16*	-0.10*	0.11*	0.09*	0.16*	0.002	0.02	-0.06*	0.01	-0.19*	-0.06*	0.15*	-0.01	0.05	0.11*	0.03*	1				
18. Population	15.94	1.47	12.53	20.72	-0.28*	-0.02	-0.16*	0.02	0.10*	0.13*	-0.27*	0.28*	0.14*	-0.16*	0.19*	-0.09*	-0.12*	0.23*	0.12*	-0.02	-0.15*	1			
19. Economic development	9.25	1.06	6.74	11.41	0.48*	0.19*	-0.39*	-0.38*	-0.62*	0.61*	-0.33*	0.22*	-0.71*	0.41*	0.21*	-0.14*	-0.23*	-0.17*	-0.25*	-0.18*	-0.12*	0.10*	1		
20. Government size	15.41	4.88	3.46	40.44	0.02	0.03	-0.16*	-0.19*	-0.26*	0.20*	0.05*	-0.05*	-0.34*	0.30*	-0.10*	-0.06*	-0.03	-0.12*	-0.15*	-0.12*	-0.05*	0.28*	0.22*	1	
21. Unemployment	8.05	5.82	0.40	33.47	-0.02	-0.06*	-0.02	-0.20*	0.11*	-0.05*	-0.03	-0.09*	0.05	0.08*	0.05*	0.08*	0.01	0.05*	0.08*	0.10*	-0.02	0.07*	0.06*	0.27*	

Sources: Based on ILOSTAT database; World Bank national accounts data and OECD National Accounts; SIPRI yearbooks; Transparency International; World Bank, Doing Business Project; International Monetary Fund, Government Finance Statistics; World Bank World Development Indicators; World Economic Forum, *Global Competitiveness Report*; UNSTAT, Global SDG Indicators Database.



### 3.5 Model

To test our hypotheses, we start by using pooled ordinary least squares (OLS) estimation, which enables us to capture cross-country differences in factors that affect firm internationalization. We then apply fixed-effects panel estimation to combine country and time effects (see Cumming et al., 2014). Given the time series data for 2000–2018, fixed-effects panel data estimation enables us to control unobserved heterogeneity across countries and time in one model. Following Wallace and Hussain (1969) and Baltagi (2008), we estimate the regression model as follows (1) with two-way error component disturbances (2) where  $\lambda_i$  denotes the unobservable country effect,  $\lambda_t$  denotes the unobservable time effect and  $e_{it}$  is the remainder stochastic disturbance term. Note that  $\lambda_t$  is country-invariant and accounts for any time-specific effect not included in the regression. For example, it could account for government programme intervention year effects that disrupt international business and drive the quality of business.  $\lambda_i$  is time-invariant and accounts for country-specific effects, such as culture and informal institutional frameworks. In vector form, our panel data estimation is written as follows:

$$y_{it} = f(\beta x_{it-1}, \Theta z_{it-1}, a_{it-1}, \mu_{it}) \quad i = 1, \dots, N; t = 1, \dots, T \quad (1)$$

$$u_{it} = \lambda_i + \lambda_t + e_{it} \quad (2)$$

where  $y_{it}$  is the export share of GDP (model 1) and OFDI (model 2) in a given country  $i$  at time  $t$ .  $\beta$  and  $\Theta$  are parameters to be estimated,  $x_{it}$  is a vector of independent explanatory variables lagged one year ( $t-1$ ), and  $z_{it}$  is a vector of exogenous control variables lagged one year ( $t-1$ );  $a_{it}$  presents the interaction of corruption in the home country ( $t-1$ ) with the number of export regulations and credit market environment at the time ( $t-1$ ) by country  $i$ . These include the disclosure index, non-financial investment, domestic credit, time to export, customs procedures related to exports, and tariff rate. As mentioned earlier, the error term  $u_{it}$  consists of unobserved country and time-specific effects and the remainder disturbance, and  $e_{it}$  is assumed to be independent and identically distributed.

Our preference for fixed effects rather than random effects was driven by the results of a Hausman test (Baltagi, 2008).<sup>3</sup> Endogeneity in the model could appear as a

<sup>3</sup> The Hausman test rejects the null at a 1 per cent significance level, suggesting that fixed effects should be used. The fixed-effects estimator concentrates on differences over time, and characterizes a single firm; that is why it is also referred to as the “within” estimator. It also explains to what extent a given firm’s change in a variable of interest affects its own internationalization activity. Thus, the fixed-effects estimator does not account for possible differences that exist across firms at a given point in time and thus does not identify the factors capturing why, for instance, the productivity of firm  $i$  is different from that of firm  $j$ . This is not the case of the random-effects estimator, whose estimates are obtained by weighing the “within” effect with the “between” effect, which allows us to identify the factors that explain the differences between firms in the panel. Thus, the random-effects estimates should provide a more exhaustive scenario of the drivers of internationalization activity in our sample. However, the possibility of a simultaneity bias induced by unobservable factors often suggests that the fixed-effects estimates may be preferred.

result of the correlation between  $x_{it}$  with unobserved factors in the error term, time-varying unobservables that affect  $y_{it}$ . Using fixed-effects estimation allows us to control for factors that change with time but do not change for the same country over our study period. At the same time, we acknowledge that addressing the potentially endogenous nature of the relationship between corruption and export is important, as corruption is associated with country-specific characteristics (e.g., business culture). Therefore, using fixed-effects estimation will control these country-specific unobservables that affect the relationship between corruption and exports. Using lagged values for control and explanatory variables would enforce the relationship arising from corruption changes affecting changes in exports.

As part of our robustness checks, we calculated model (1) using both fixed and random effects, as each method has different assumptions on two-way error terms.

To address the multicollinearity concern, we used the variance inflation factor in both models, which were between 2 and 5 (Kutner et al., 2004). Thus, the fixed-effects regressions are tested for multicollinearity by calculating the variance inflation factor. As a result, it was found that despite the high pairwise correlation between corruption and economic development, they are not multicollinear in the models and can explain the regression outcome variable. Hence, the models seem to suggest that the predictors in question are reliably associated with the outcome (high estimates, low standard errors) (see McElreath, 2020).

We note that the significance and size of the beta coefficients might not always reflect the size or nature of the relationship if there is possible nonlinearity between export regulations and credit conditions in different economic contexts and internationalization (see Audretsch et al., 2019). We thus calculate post-estimated predictive margins for each institutional dimension using the results of the fixed-effects regression in table 3 with the dependent variables exports (column 4) and OFDI (column 8). First, we calculated the direct effects of home export regulation, credit markets and corruption on internationalization (exports in the left column, OFDI in the right column, figure 2).

We calculated post-estimated predictive margins to capture the nonlinear effects of home-country export regulation and credit market on internationalization in different corruption contexts (figures 3 and 4).<sup>4</sup> The predictive margins enable us to visualize how a change in each of the institutional dimensions contributes to a marginal change in exports and OFDI across a distribution of each institutional dimension and between more and less corrupt contexts. Building on Williams (2012), the beta coefficients in table 3 provide averaged results of model estimation and are limited in capturing nonlinear effects. For example, a one-unit change in the institutional dimension may result in a

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<sup>4</sup> The margins are a tool to explain a relationship when the direction of the relationship may be nonlinear, rendering the net effect statistically insignificant.

disproportionate change in internationalization at different institutional settings, which the beta coefficient cannot capture. Figures 2–4 illustrate the margins of responses for specified values of covariates. It uses 95 per cent confidence intervals to measure the boundaries of the effect of various institutional contexts on internationalization.

## 4. Empirical results

We start by presenting our findings using the predictive margins shown in figures 2–4. These were calculated based on the results of fixed-effects estimations (coefficients in base effects and interaction effects), with exports and OFDI as two dependent variables (table 3). Table 3 includes both basic models for fixed effects (columns 1–2, 5–6) and models with interaction terms (columns 3–4 and 7–8, table 3).

**Table 3. Fixed-effects (FE) estimation with interactions**

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Model	Model 1: Dependent variable exports as % of GDP				Model 2: Dependent variable OFDI as % of GDP			
Time to export (H1)	7.41*** (0.00)	49.91*** (0.00)	39.79*** (0.00)	36.51*** (0.00)	-0.89 (0.56)	-8.38 (0.58)	-14.94 (0.28)	-14.19 (0.23)
Customs procedures (H1)	-0.89 (0.63)	-0.62 (0.60)	2.53* (0.35)	1.16 (0.36)	0.34 (0.60)	0.67 (0.69)	-1.01 (0.58)	-2.29 (0.61)
Trade tariff (H1)	-0.15** (0.04)	-0.44*** (0.00)	-0.63*** (0.00)	-0.90*** (0.00)	0.06 (0.08)	-0.01 (0.10)	0.07 (0.20)	-0.02 (0.20)
Disclosure index (H2)	0.41* (0.08)	0.26 (0.20)	0.39* (0.07)	-0.16 (0.45)	-0.32 (0.21)	-0.18 (0.26)	-0.27 (0.27)	0.55 (0.54)
Domestic credit to private sector (H2)		-0.03** (0.04)	-0.03** (0.04)	0.09*** (0.00)		0.03* (0.07)	0.03* (0.06)	0.08* (0.07)
Non-financial investment (H2)	-0.53*** (0.00)	-0.13 (0.14)	-0.12 (0.14)	0.16 (0.33)	0.28** (0.01)	0.51*** (0.00)	0.51*** (0.00)	-1.13*** (0.00)
Corruption (H3)	0.02 (0.10)	-0.01 (0.12)	-0.14 (0.12)	1.88*** (0.00)	-0.19*** (0.00)	-0.20*** (0.00)	-0.71*** (0.00)	0.58 (0.27)
Economic development		8.79** (0.04)	3.06 (0.39)	-8.49* (0.06)		-5.03 (0.57)	-10.03* (0.08)	-15.10*** (0.00)
Population		-34.08** (0.03)	-34.14** (0.03)	-32.52** (0.04)		3.52 (0.75)	3.97 (0.83)	4.47 (0.84)
Industry		0.91*** (0.00)	0.92*** (0.00)	0.93*** (0.00)		0.22*** (0.00)	0.23*** (0.00)	0.25*** (0.00)
Time to entry		0.08*** (0.00)	0.08*** (0.00)	0.08*** (0.00)		0.01 (0.12)	0.01 (0.20)	0.01 (0.20)
Entry procedures		-0.05 (0.13)	-0.06 (0.13)	-0.01 (0.13)		-0.03 (0.15)	-0.06 (0.15)	-0.04 (0.15)

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**Table 3. Fixed-effects (FE) estimation with interactions (Concluded)**

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Model	Model 1: Dependent variable exports as % of GDP				Model 2: Dependent variable OFDI as % of GDP			
Time to register property		0.03*** (0.00)	0.02*** (0.00)	0.02*** (0.00)		-0.01 (0.13)	-0.01 (0.12)	-0.01 (0.11)
Procedures to register property		-0.54* (0.07)	-0.34 (0.12)	-0.72** (0.03)		0.38 (0.37)	0.53 (0.37)	0.43 (0.38)
Profit tax rate		-0.01 (0.16)	-0.01 (0.16)	-0.01 (0.10)		-0.10 (0.17)	-0.09 (0.17)	-0.05 (0.18)
Time required to file taxes		0.01 (0.10)	0.01 (0.12)	0.01 (0.15)		0.01 (0.15)	0.01 (0.16)	0.01 (0.14)
Unemployment		0.22** (0.01)	0.21** (0.01)	0.22** (0.01)		0.12 (0.11)	0.12 (0.11)	0.17 (0.11)
Scientific output		-2.65*** (0.00)	-2.80*** (0.00)	-2.83*** (0.00)		-0.77 (0.47)	-0.78 (0.47)	-0.79 (0.27)
Government size		-0.08 (0.12)	-0.08 (0.12)	-0.09 (0.12)		-0.17 (0.15)	-0.18 (0.15)	-0.13 (0.15)
Trade tariff × Corruption (H4)			-0.01 (0.15)	-0.01** (0.01)			0.01 (0.05)	-0.01 (0.05)
Time to export × Corruption (H4)			0.14*** (0.00)	0.11*** (0.00)			0.09* (0.01)	0.08* (0.03)
Customs procedures x Corruption (H4)			0.07** (0.02)	0.04 (0.13)			-0.04 (0.15)	-0.07** (0.01)
Domestic credit to private sector × Corruption (H5)				0.002*** (0.00)				0.001 (0.10)
Non-financial investment × Corruption (H5)				0.01 (0.12)				-0.041*** (0.00)
Disclosure × Corruption (H5)				-0.01 (0.11)				0.02* (0.06)
Constant	12.41 (0.59)	-65.76* (0.02)	-21.19 (0.51)	81.18* (0.05)	-2.53 (0.31)	39.71 (0.78)	63.36 (0.94)	99.64** (0.01)
Number of observations	1443	1443	1443	1443	1443	1443	1443	1443
R2 within	0.075	0.277	0.291	0.309	0.049	0.062	0.066	0.088
R2 overall	0.005	0.007	0.001	0.006	0.038	0.015	0.007	0.007
R2 between	0.011	0.017	0.005	0.001	0.0525	0.004	0.025	0.001
F-stats	5.26	13.24	13.09	12.94	3.18	2.20	2.15	2.66
Log-likelihood	-5 586.48	-4 579.00	-4 565.30	-4 546.87	-5 296.43	-4 563.79	-4 561.30	-4 544.83
F Test u=0	175.55	169.60	152.51	134.13	4.76	3.73	3.72	4.02
Sigma u	28.39	33.32	32.32	31.84	4.94	5.50	5.90	6.36
Sigma e	7.25	6.06	6.01	5.95	6.89	6.89	6.89	6.82
Rho	0.93	0.96	0.96	0.96	0.33	0.38	0.42	0.46

Source: Based on ILOSTAT database; World Bank national accounts data and OECD National Accounts; Transparency International; World Bank, Doing Business Project; International Monetary Fund, Government Finance Statistics; World Bank World Development Indicators; World Economic Forum, *Global Competitiveness Report*; UNSTAT, Global SDG Indicators Database.

Note: Reference year = 2000. Number of observations = 1,433. Number of countries = 96. P-values are in parentheses.

We used the “margin” command in the statistical software STATA 15 to compute the standard errors of the means. The “marginsplot” command was used afterward as it gives a good view of the shape of the relationship (Williams, 2012). It illustrates the strength and direction of the relationship as well as changes in the marginal effect between institutional dimensions and internationalization. For example, predictive margins allow us to ask a question like, what would be the share of exports in GDP as the time to export (border compliance) increases from 10 to 50 days, in a country with more or less corruption? It also allows us to make efficient comparisons between levels of corruption, as well as to measure the size of the effect of each change in institutional dimension (export regulation and credit markets).

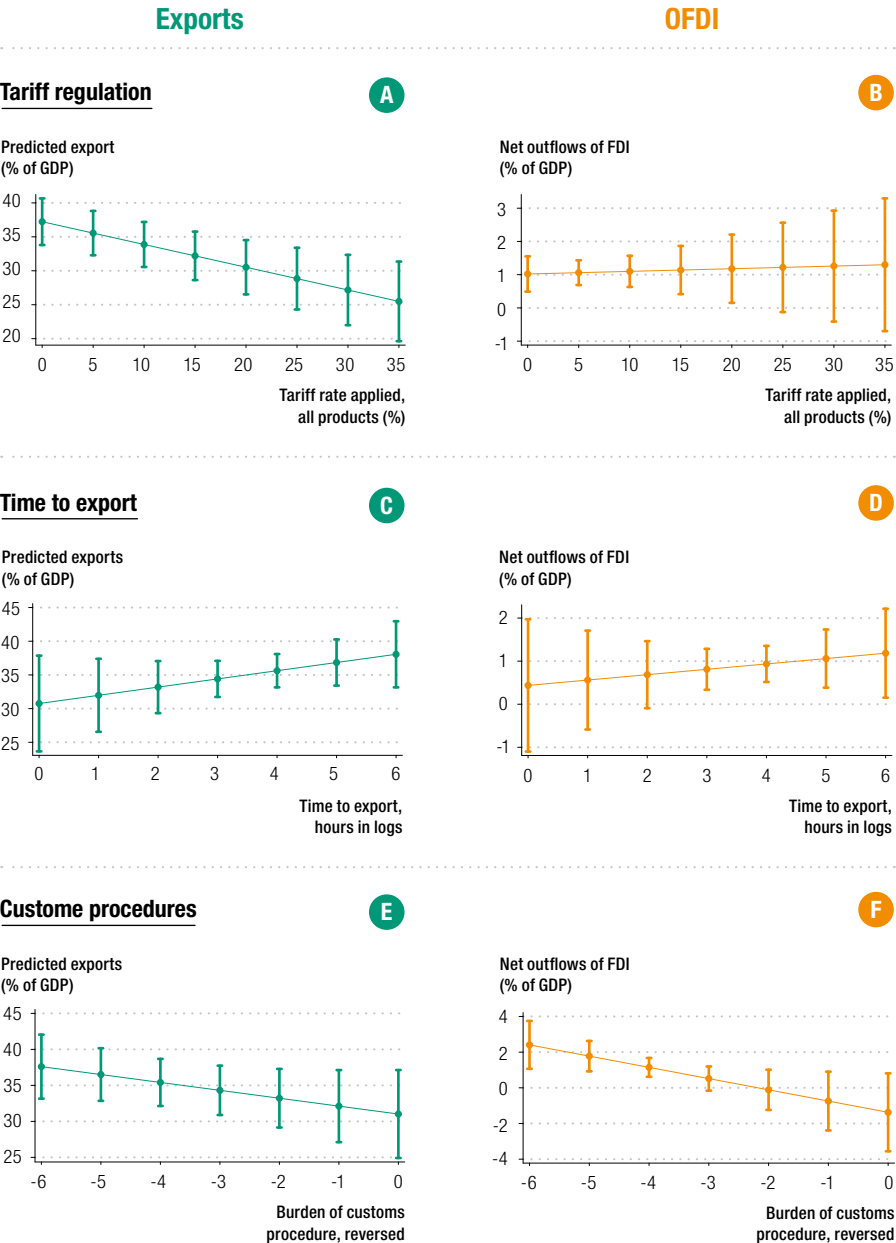
We find partial support for Hypothesis 1a (H1a), which predicted that more extensive home-country export regulations would discourage exports (figures 2A and 2C). Customs procedures and tariff rates hamper exports, but time to export (measured in hours) facilitates exports (column 4, table 3). The beta coefficient for customs procedures is not significant, and the relationship turns negative at the high level of customs procedures (figure 2C). Accounting for tariff and non-tariff regulation jointly, we discover that changes in tariff regulation better predict changes in exports. Figure 2A illustrates the negative relationship – for example, an increase in tariff rate from 10 to 30 per cent results in a decrease in exports from 35 to 25 per cent of GDP.

H1b predicted that more extensive home-country export regulations would encourage OFDI (figures 2B, 2D, 2F and column 8, table 3). We do not find support for this (examining customs procedures, tariff rates and time to export).

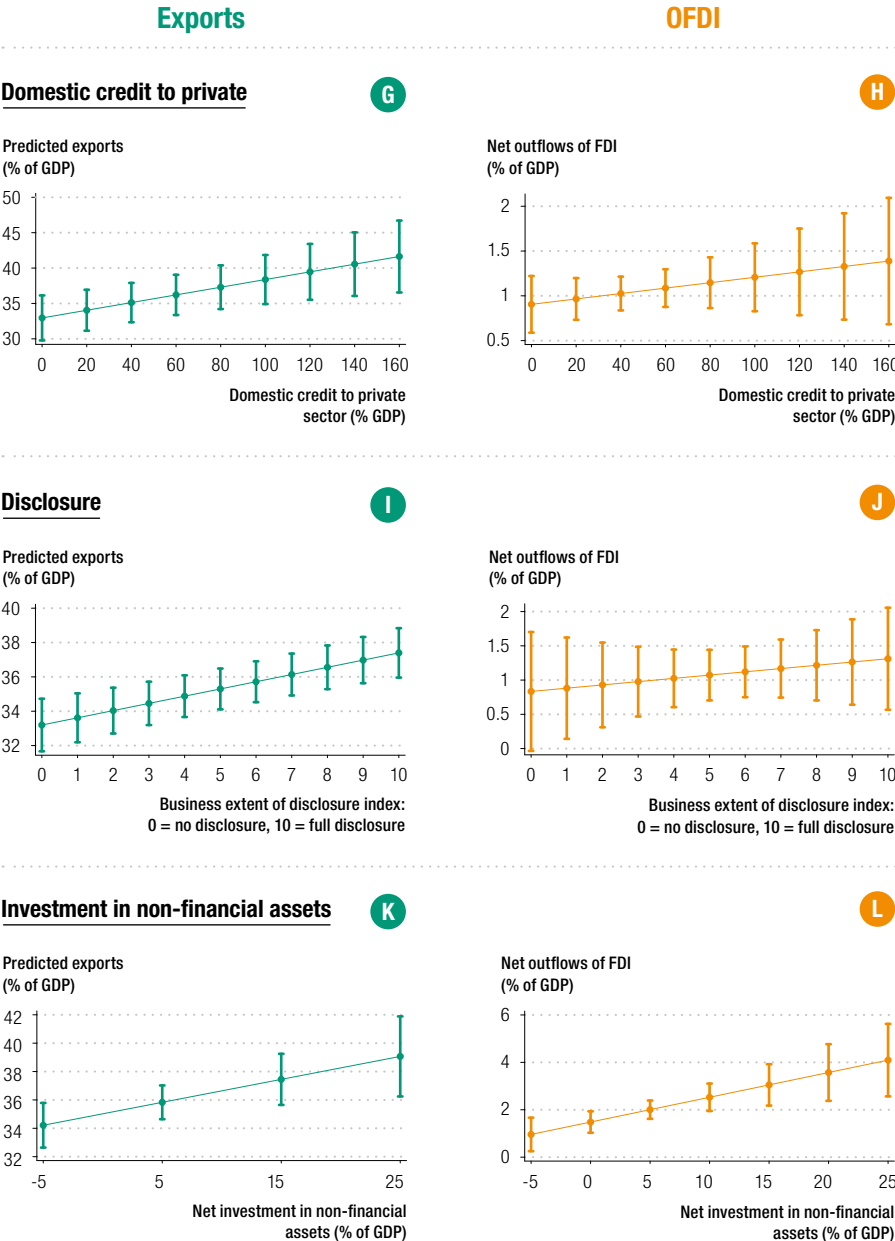
Turning to our hypotheses on the direct effect of home-country credit markets, we find partial support for H2a, which predicted that less developed home credit markets would discourage exports (figures 2G, 2I, 2K). Investment in non-financial assets has no effect on exporting (figure 2K and column 4 in table 3). Domestic credit to the private sector increases as it moves from zero to 80 and then decreases again (figure 2G), which means its effect on exports is nonlinear. We also find that coefficients in columns 3–4 (table 3) change. Higher disclosure facilitates exports (figure 2I). We do not find support for H2b, which predicted that less developed home credit markets would encourage OFDI (figures 2H, 2J, 2L). An increase in domestic credit to the private sector increases OFDI (figure 2H), and investment in non-financial assets also results in higher OFDI (figure 2L) (column 8, table 3). Disclosure rate is not associated with OFDI.

H3a and H3b predicted that home-country corruption would discourage exports and encourage OFDI, respectively. We find that corruption is not associated with an increase in exports (figure 2M) but is negative and statistically significant for OFDI. When corruption approaches a value of 50, one can say that OFDI turns to zero (figure 2N).

**Figure 2. Impact on internationalization of export regulation, credit market environment and corruption (Direct effects)**

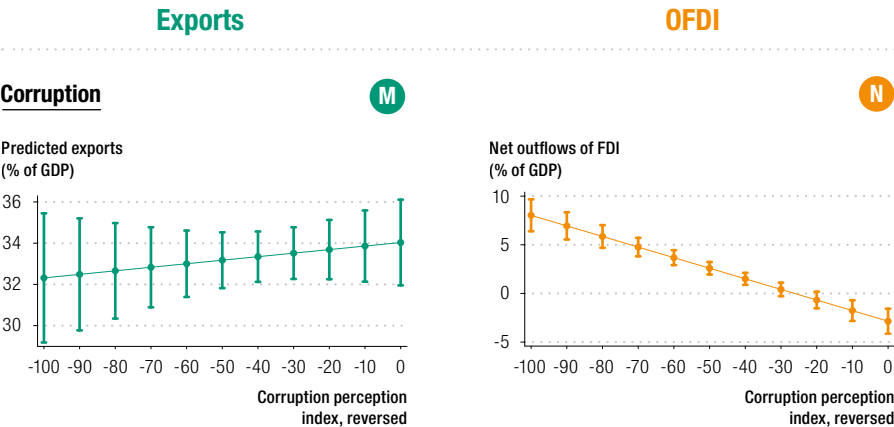


**Figure 2. Impact on internationalization of export regulation, credit market environment and corruption (Direct effects) (Continued)**



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**Figure 2. Impact on internationalization of export regulation, credit market environment and corruption (Direct effects) (Concluded)**



Source: Based on ILOSTAT database; World Bank national accounts data and OECD National Accounts; SIPRI yearbooks; Transparency International; World Bank, Doing Business Project; International Monetary Fund, Government Finance Statistics; World Bank World Development Indicators; World Economic Forum, *Global Competitiveness Report*; UNSTAT, Global SDG Indicators Database.

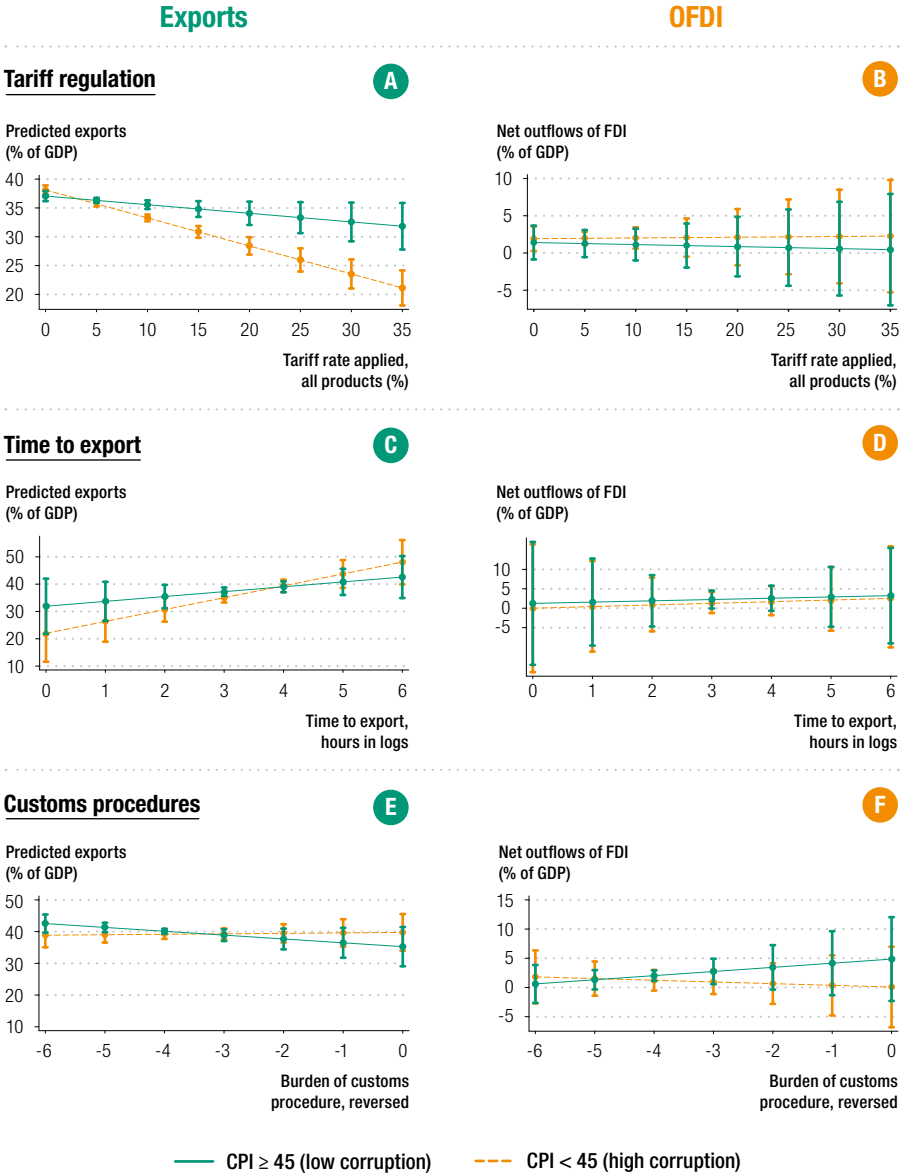
Note: Reference year = 2000. Number of observations = 1,433. Number of countries = 96.

For the purpose of testing the moderating effect of corruption, we used the median of the Corruption Perception Index for our countries, splitting the sample into more corrupt (above median) and less corrupt (below median) contexts. We then tested our hypotheses and predictive margins.

H4 posited that home-country corruption would accentuate the negative effect of extensive export regulations on exports (H4a) and the positive effect of export regulations on OFDI (H4b). We find partial support for H4a when it comes to tariff regulation but not our other measures of export regulation. In a zero tariff context, average exports to GDP are 42 per cent for both less and more corrupt contexts. However, an increase in tariff rates in more corrupt contexts ( $>-45$ ) of inverted Corruption Perception Index) accentuates a negative effect of tariff regulation on exports, with the difference in the decline in export rates between less and more corrupt contexts becoming more pronounced after tariff rates  $>10$  (figure 3A). When tariffs reach 35 per cent in more corrupt contexts, exports fall to 25 per cent of GDP. The same tariff rate (35 per cent) in less corrupt contexts ( $\leq 45$  of the inverted Corruption Perception Index) reduces exports to GDP to 35 per cent (Figure 3A). Figures 3B, 3D and 3F illustrate the relationship between corruption and export regulation in their impact on OFDI. We do not find empirical evidence to support H4b: more corruption does not accentuate an effect of export regulation on OFDI. In countries with extensive export regulation, more corruption is not associated with OFDI (figures 3B, 3D, 3F).



**Figure 3. Export regulation and internationalization in countries with different levels of corruption (Indirect effects)**



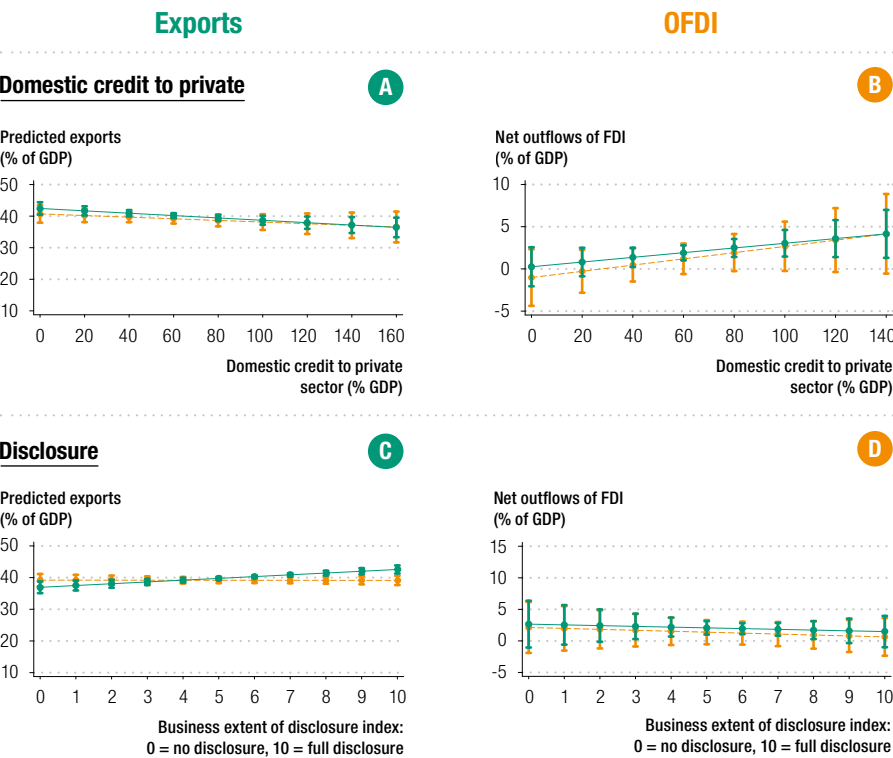
Source: Based on ILOSTAT database; World Bank national accounts data and OECD National Accounts; SIPRI yearbooks; Transparency International; World Bank, Doing Business Project; International Monetary Fund, Government Finance Statistics; World Bank World Development Indicators; World Economic Forum, *Global Competitiveness Report*; UNSTAT, Global SDG Indicators Database.

Note: Reference year = 2000. Number of observations = 1,433. Number of countries = 96.

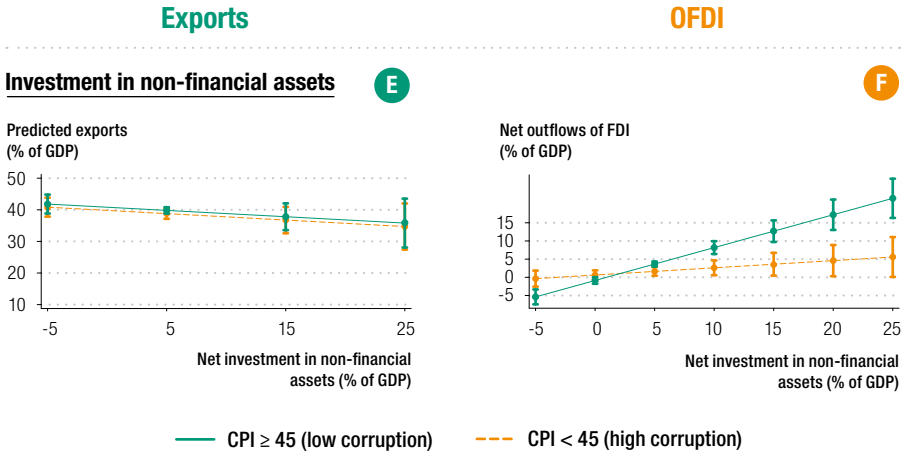
H5 predicted that home-country corruption would accentuate a negative effect of weak credit market effects on exports (H5a) as well as a positive effect of weak credit market effects on OFDI (H5b). Our results do not provide support for either hypothesis. We find that more corruption reduces the positive effect of disclosure on exports, whereas high levels of disclosure in more corrupt contexts will have lower export rates (figure 4C). The results for other factors are not significant (figures 4A, 4E). We find that more corruption does not accentuate a positive effect of weak credit market effects on OFDI (figures 4B, 4D, 4F) (see Stoian and Mohr, 2016). We find that an increase in non-financial investments in a country increases OFDI (figure 4F). At the same time, in more corrupt contexts, weak credit market institutions reduce OFDI. We find that corruption reduces OFDI (columns (5–7, table 3).

Our findings in figures 3 and 4 line up with previous findings on the negative effect of corruption on exports and OFDI (see Cuervo-Cazurra, 2012, 2016).

**Figure 4. Credit market environment and internationalization in countries with different levels of corruption** (Indirect effects)



**Figure 4. Credit market environment and internationalization in countries with different levels of corruption** (Indirect effects) (Concluded)



Source: Based on ILOSTAT database; World Bank national accounts data and OECD National Accounts; SIPRI yearbooks; Transparency International; World Bank, Doing Business Project; International Monetary Fund, Government Finance Statistics; World Bank World Development Indicators; World Economic Forum, *Global Competitiveness Report*; UNSTAT, Global SDG Indicators Database.

Note: Reference year = 2000. Number of observations = 1,433. Number of countries = 96.

When it comes to our control variables, we find that population size is not associated with OFDI, and that countries with large populations and larger markets have on average 32–34 per cent of GDP less in exports than smaller countries. We find that countries with higher GDP per capita have higher exports (columns 2–3, table 3) than those with lower GDP per capita, which has a lower share of OFDI. We also find a positive effect of the unemployment rate on exports and a neutral effect on OFDI, which could be associated with structural changes in the economy. Human capital is negatively associated with exporting and neutral for OFDI. Time to register property has a positive effect on exports.

Table 4 summarizes the results of our hypotheses testing.

Table 4. Summary of hypotheses results		
Hypotheses		Results
H1a	More extensive home-country export regulations will discourage internationalization through exports.	Mixed: Partial support
H1b	More extensive home-country export regulations will encourage internationalization through OFDI.	Not supported
H2a	Less developed home-country credit markets will discourage internationalization through exports.	Mixed: Partial support
H2b	Less developed home-country credit markets will encourage internationalization through OFDI.	Not supported
H3a	Home-country corruption will discourage internationalization through export.	Not supported
H3b	Home-country corruption will encourage internationalization through OFDI.	Not supported
H4a	Higher home-country corruption will accentuate the negative relationship between export regulations and exports.	Mixed: Partial support
H4b	Higher home-country corruption will accentuate the positive relationship between export regulations and OFDI.	Not supported
H5a	Higher home-country corruption will accentuate the negative effect of weak credit markets on exports.	Not supported
H5b	Higher home-country corruption will accentuate the positive effect of weak credit markets on OFDI.	Not supported

Source: Authors' estimations.

## 5. Robustness checks

We did a series of robustness checks to observe the effect of export regulations and credit markets on exports and OFDI. We also estimated pooled OLS regression with year-fixed effects but no country-fixed effects and created predicted margins using OLS data. The signs and range of the coefficients were similar, but standard errors were different, demonstrating the OLS estimation's potential bias.<sup>5</sup>

We performed Arellano-Bond linear dynamic panel-data estimation on our model by adding the first and second lagged values of exports (model 1) and OFDI (model 2) as an independent variable in a model. Neither the first nor second lag of the dependent variable was statistically significant. Furthermore, we examined the

<sup>5</sup> OLS results in table and predictive margins are not reported but are available from the authors on request. Owing to differences in the size of coefficients, we consider that the relationship between institutions and internationalization is dynamic and changes over time, with panel data better for capturing transition.

autocorrelation of the first and second lagged residuals, and neither the first nor the second lag was collinear. We thus included the mixed-effects panel data model, excluding the lagged dependent variable.

Third, as part of the robustness check, we used *bribery incidence*, measured as the share of firms experiencing one or more bribes requests over the last year (Cuervo-Cazurra, 2008; 2012). This is taken from World Bank data. The indicator varies from 0.1 per cent for the least corrupt business environment to 69.6 per cent for the most corrupt. The 50th percentile of the sample refers to, on average, 14.3 times out of 100 when one or more bribes was requested. Signs and ranges of the coefficients and standard errors were similar, demonstrating the robustness of estimation using both bribes demanded and the Corruption Perception Index.<sup>6</sup> In addition, we experimented with the second lag, which provided similar results in terms of coefficient size, the direction of relationship and significance levels.

## 6. Conclusions and policy considerations

We tested how export regulations, credit markets and corruption affect two types of internationalization activity in a country – one which captures exports and the other OFDI. Our findings underscore the importance of unpacking the institutional context shaping internationalization recognized in earlier literature (e.g. Chetty and Hamilton, 1993; Luiz et al., 2017) and considering multi-dimensionality in the environment for firms (Audretsch et al., 2019).

Our findings add to scholarly debates in the following ways. First, related to the influence of the institutional context on OFDI and exports (Gaur et al., 2014, Cuervo-Cazurra et al., 2019), we show that the home country's institutional context has a different impact on the two types of internationalization. We find that corruption does not have a significant impact on exports, but it significantly hinders OFDI. Second, our study demonstrates that the relationship between some types of institutional contexts (e.g., credit conditions) and internationalization is nonlinear, with tariffs having a more substantial impact on exports than non-tariff regulation. This is in line with recent studies that have argued for the importance of decomposing the complex relationship between institutions and firms and economic outcomes, including considering non-linearities (see Audretsch et al., 2021, 2019). Our finding on time to export is based on our sample of varied institutional contexts and is not in line with previous research in the OECD context (Li, 2019) and could be investigated in future research.

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<sup>6</sup> Results available from the authors upon request.

Third, our results show that credit markets can help explain both exports and OFDI, with OFDI being more affected by weak credit markets. This could be because of the resources required to venture into a foreign market (Gaur et al., 2014) as firms incur the costs of searching, developing relationships and learning the new environment. If OFDI is undertaken as a strategic escape response by firms in unfavourable home environments (Shi et al. 2017; Cuervo-Cazurra et al. 2017, 2015; Cuervo-Cazurra and Ramamurti, 2017; Witt and Levin, 2007), our finding on the role of the home credit market suggests that a level of home-country institutional quality may be needed even for FDI undertaken as an escape response. Our study does not directly test firm owner/manager options and strategic decisions, and it is an interesting question for future research.

Our study has implications for policymakers interested in supporting economic growth and improving international competitiveness through firm expansion into foreign markets. Targeted policy instruments on internationalization can include, for example, dedicated programmes or agencies to support exports and FDI (e.g., export and investment promotion agencies), broader firm growth support that can improve opportunities and resources needed to engage in exports, and a wide range of home-country measures that affect FDI flows (e.g., home-country regulations on capital outflows, technical assistance, information, technology transfer, financial and fiscal incentives, market access regulations and investment insurance) (see UNCTAD, 2001).

Our findings show that not all regulatory settings have a similar impact on exports and OFDI. Our results suggest that customs procedures and tariffs may be appropriate areas to evaluate when the goal is to support exporting. It is also worth considering where and how broader anti-corruption efforts might affect internationalization. We find that higher levels of corruption discourage OFDI; we also find that tariffs affect exports differently in different levels of corruption, with reduced exports becoming more pronounced after higher tariff rates in more corrupt contexts. Note that our measure of corruption is not specific only to exporting or OFDI but reflects corruption perceptions more broadly, suggesting the potential for gains from improving several mutually supporting institutions (IMF, 2019, p. 40), particularly as many countries have pursued anti-corruption measures.

Our results also suggest that strengthening credit markets may support both exports and OFDI. One specific cluster of costs that firms face in internationalization relates to the fixed and sunk costs when exploring and venturing into foreign markets (Desbordes and Wei, 2017). They often rely on credits or capital from external sources to finance their upfront costs. Policymakers could assess if their domestic firms could benefit from measures to reduce search and exploration costs to assess foreign markets and help firms find prospects and partnerships abroad. Given the potential of new “born global” firms and the importance of credit in assisting new firms to access foreign markets (see Aghion et al., 2007), there can be value in helping new firms access foreign markets and access financial resources.

## 7. Future research

Future research should focus on understanding how specific regulatory changes and policies affect exporting aspirations and outcomes. When it comes to corruption, an interesting question for future research is to understand how corruption, specifically in exporting processes (e.g. when bringing goods across borders), matters in the context of a highly corrupt environment. Our measure examined broader corruption perceptions, so decomposing where corruption occurs and how this affects internationalization can provide useful insight. This could shed light on our findings on time to export, which are based on widely varied institutional contexts.

An important question is also on how reforms in credit markets affect small, new and informal firms that have export potential, compared with State-owned, large and established companies (see O'Toole and Tarp, 2014), as all firms are not affected equally (see Aghion et al., 2007; Roper et al., 2017). Future research can also examine the extent to which firms abandon exporting due to a challenging institutional environment and to what extent firms pursue OFDI as a substitute. Finally, our study may provide a useful base for more differentiated comparative analysis to shed more light on the complex direct and indirect relationships and interplay between regulatory aspects, credit markets and corruption in developed- and developing-country home-country contexts.

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